NEWSLETTER

NATIONAL CLONAL GERMPLASM REPOSITORY
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Kim E. Hummer, Curator

APRIL, 1988

NEW ACCESSIONS

Our most exciting arrivals from foreign sources have been 30 Corylus avellana cultivars received from Italy, Yugoslavia, and Spain. We are cooperating with Dr. Shawn Mehlenbacher, filbert breeder at Oregon State University for this project. After the post-entry quarantine period Shawn will test these for resistance to Eastern Filbert Blight with hopes of incorporating resistant cultivars into his active breeding program. We have also recently received Corylus selections of wild native species of China and Korea.

We have received 26 Pyrus, 28 Ribes, 11 Fragaria, and 4 Rubus cultivars from amature cooperators in the North American Fruit Explorers and the California Rare Fruit Growers. We heartily thank the members of these organizations and hope to continue such positive germplasm exchange.

Dr. Jim Ballington, North Carolina State University, collected several native Chinese Rubus species for us and provided about 30 advanced selections from his Vaccinium breeding program. Thanks also to Dr. Paul Lyrene, University of Florida, for providing "Oleno Yellow" selection of Vaccinium elliotii, and a selection of Vaccinium darowii.

We are looking forward to Dr. Maxine Thompson's upcoming plant exploration in Pakistan this spring and summer. She will encounter a wealth of fruit and nut germplasm new to this country.

NCGR STAFF CHANGES

Since our last newsletter two staff members have been added to the repository. We have added a germplasm Enhancer, Dr. Francis Lawrence has been breeding small fruits for the USDA for many years. His program has been expanded from Northwest regional interests to broader considerations evaluating and screening the world germplasm collection which is developing at the NCGR.

We have also added a Biological Technician who is in charge of plant evaluation and record keeping for repository data. Donna Gerten, who formerly worked with Dr. Ed Trione at the Forage Seed Laboratory, began her full time position at the repository at the end of March 1988.

NCGR STAFF

Federal Staff USDA-ARS

M. Couey, Research Leader
K. Hummer, Curator
F. Lawrence, Germplasm Enhancer
P. Benoist, Secretary
D. Gerten, Records Management
J. Postman, Plant Pathology
BJ Rebhuhn, In vitro culture
P. Robbins, Plant Propagation
J. Snead, Farm Manager

Oregon State University Cooperators

B. Reed, Post Doctorate Research
Cryopreservation
L. Daley, Horticulturalist
J. Chandler, Biological Technician

Collaborators

M. Westwood, Emeritus Professor, OSU
H. Lagerstedt, Former Research Leader, USDA/ARS

VIRUS TESTING

Apple Mosaic Virus in New Corylus Germplasm from Europe

By Joseph Postman

During February and March 1988, new Corylus (Hazelnut) accessions were received from experiment stations in Spain, Italy, and Yugoslavia. This material included local cultivars and selections that are of interest to the breeding program at Oregon State University. Since apple mosaic virus (ApMV) was detected in Corylus germplasm originating from several of these countries (Plant Disease 71:944-945) this new material was tested by ELISA for ApMV as soon as the grafted scions began growth. Nine of sixteen accessions from Spain and three of six accessions from Italy tested positive for ApMV. The five accessions from Yugoslavia all tested negative.

Several Corylus accessions previously identified to be infected with ApMV have now been successfully heat treated and have tested negative for this virus. The cultivars 'Pallaz' and 'Tonda Bianca' are the first to successfully come through the virus elimination program. Corylus responds very well to thermotherapy, producing luxurious growth at the 38°C temperatures used for virus elimination. Unfortunately, heat treated Corylus shoots are difficult to propagate. Dozens of tip grafts must be done to get a few to survive. The virus appears to be easily eliminated from Corylus if we can successfully propagate the heat treated shoots. Several methods are being explored to improve our propagation success.

DISTRIBUTION

In 1987 we had a very busy year of plant distribution. We sent plant material to 25 foreign countries and 28 states within the United States. We provided 183 requestors with 1312 accessions.

Because we send varied types of plant material we provide the following schedule for requestors. We ask that requests for cuttings and plants be written or phoned to us 6 months to 1 year in advance of need where possible.

Foreign requestors should include plant import permits from their country's Ministry of Agriculture with the original letter. This will enable us to efficiently propagate the needed requests and provide for required phytosanitary certification.

Our spring comes earlier than many locations in North America. By February 15 our pear trees have budded out and scionwood can no longer be collected for sending.

Presence of virus within plants may effect vigor, productivity, graft compatibility, cold hardiness, and resistance to disease and insects. Evaluations of virus infected plants may give erroneous or missleading data. Care should be taken by the recipient to use virus-negative plants for accurate germplasm evaluation.

NCGR-CORVALLIS DISTRIBUTION SCHEDULE

Genus	Seed	Scionwood	Budwood	Stem Cutting	Root Cutting	Plant
Corylus	All Year	Jan-Feb 15	Aug-Sept	--	--	--
Fragaria	All Year	--	--	Jun-Nov (runners)	--	Jun-Feb (crown)
Humulus	All Year	--	--	Jan-Aug	Jan-Feb	--
Mentha	All Year	--	--	Jun-Nov	--	Jun-Nov
Pyrus	All Year	Jan-Feb 15	Aug-Sept	--	Jan-Feb	--
Ribes	All Year	--	--	Jun-Nov	--	Jun-Nov
Rubus	All Year	--	--	Jun-Nov	Nov-Feb	Jun-Nov
Vaccinium	All Year	--	--	Jun-Nov	--	Jun-Nov

In vitro plants, pollen, and other propagules may be available by specific request.

The following genera are availeble primarially es seed, some as scionwood :

Amelanchier, Aronia, Chaenomeles, Chiogenes, Cotoneaster, Crataegus, Cydonia, Docynia, Ducbesnea, Eriobotrya, Gaultheria, Gaylussacia, Mespilus, Osteomeles, Peraphyllum, Photinia, Potentilla, Pyracantha, Pyronia, Raphiolepis, Sambucus, Sorbaronia, Sorbopyrus, Sorbaria, Sorbus, Stauntonia, Stranvaesia.

GRIN

By Donna Gerten and Kim Hummer

We currently have 5,721 accession records loaded into the GRIN database. We will be loading our inventory this month with order processing and observation data to follow. Ed Bird and Quinn Sunnot of the GRIN team recently visited NCGR. They advised us on streamlining our accession and inventory loading and the new structures of the accession and inventory records.

We have established an "Alternate Source Germplasm" (ASG) database on the Prime computer. This ASG data is designed to be a quick search file for sources of clonal crops outside the National Plant Germplasm System. So far, over 10,000 records, just a beginning, have been added. Lists such as the IBPGR European Apple list, collections of temperate crops at subtropical and tropical research facilities, foreign and domestic research collections have yet to be added.

PUBLICATIONS

Montano, J., M. Rebhuhn, K. Hummer, and H. Lagerstedt 1987. Differential Thermal Analysis for Large Scale Evaluation of Pear Cold Hardiness. HortScience 22:1335-1336

Postman, J and H.R. Cameron. 1987. Apple Mosaic Virus in U.S. Filbert Germplasm. Plant Disease 71:944-945.

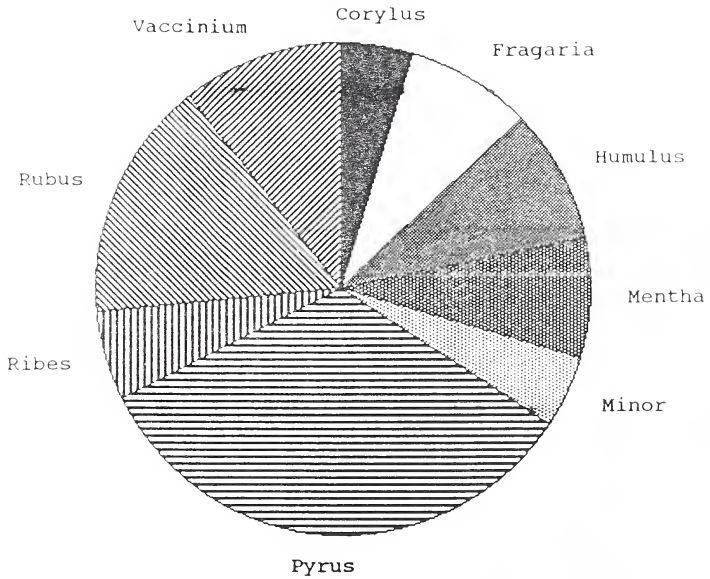
Postman, J. and K. Hummer. 1988. Virus tested Pear Germplasm Available at the National Clonal Germplasm Repository in Corvallis, Oregon. Fruit Varieties Journal. In Press.

Reed, Barbara. 1988. Cold Acclimation as a Method to Improve Survival of Cryopreserved Rubus Meristems. Cryoletters. In Press.

IN VITRO

By BJ Rebhuhn

Spring growth yields optimal tissue for starting in vitro cultures. We are taking new starts to replace the Rubus, Fragaria, Pyrus, and Vaccinium collections. Renovation of these collections is necessary to incorporate new virus-negative material, and to replace old cultures, which, after several transfers, have degenerated or possibly changed in character. Eight cultivars of Corylus are multiplying in vitro, and we hope this year to initiate a collection of in vitro filberts. Experiments on propagation and rooting of Pyrus and Corylus are in progress. Also, virus infected plants are being heat-treated and their meristems excised in order to produce virus free in vitro cultures and whole plants. We are currently propagating virus cleaned Pyrus, Rubus, Corylus, and Fragaria in this manner.



CRYOPRESERVATION

By Barbara Reed

We collected, prepared, and stored about 50 Corylus pollen accesions in liquid nitrogen. Replicate samples were prepared for storage at Corvallis with backup at the National Seed Storage Laboratory in Ft. Collins, Colorado. Arrangements will soon be made to transfer the backup pollen supply to NSSL.

Initial tests of isolating and storing Corylus embryos at liquid nitrogen temperatures shows promise. We have observed high survival of isolates as callus.

Tests of cryoprotectant and freezing procedures are continuing to improve survival of Vaccinium and Pyrus meristems after storage at liquid nitrogen temperatures.

A paper entitled Cold Acclimation as a Method to Improve Survival of Cryopreserved Rubus Meristems by Barbara Reed has recently been accepted by Cryo-Letters for May-June 1988 Publication .

FIELD COLLECTION

By Joe Snead

We are renovating our Ribes and Rubus field collections. The new Ribes field has been planted and the irrigation system has been purchased and is ready to install. The new Raspberry field is progressing and should be completed in mid June. The new field will be trellised on a four wire system and have over head bird netting. Watering will be done by drip irrigation. The new planting will use turf between the rows.

The Pyrus field has been enlarged by two acres. We will now be using the swale slope bordering the field for planting. The pear pest control plan is changing to a soft spray program. We will be using Dimilin, a biological control agent, for our main cover sprays.

Our Vaccinium field maintenance is about to change. Presently we use turf between the rows. We will be going to an all sawdust field and doubling our row spacing at the suggestion of our technical committee. This will provide places for our quickly growing collection.

Eastern filbert blight has become a problem in the Northern part of Oregon. The disease has been observed as close as 40 miles north of Corvallis. We are considering backup locations for the filbert collection at sites removed from any filbert growing region.

The Oregon State University Pyrus species block is being removed. This was the mother block for much of our Pyrus species collection. We appreciate the effort that many OSU Scientists made in establishing this world reknowned species collection. We are thankful that we could incorporate this fine collection into our holdings.

Posters Presented

Hummer, K. 1987. Pyrus germplasm at NCGR-Corvallis. 84th Annual Meeting ASHS, Orlando, Florida, November 6-12.

Postman, J.D. and BJ Rebhuhn. 1988. Detection and elimination of viruses from clonal fruit and nut germplasm, Beltsville Symposium XIII Biotic Diversity and Germplasm Preservation - Global Imperatives, May 9-11.